GUIDE FOR GRADING

SOUTHERN PINE LOGS

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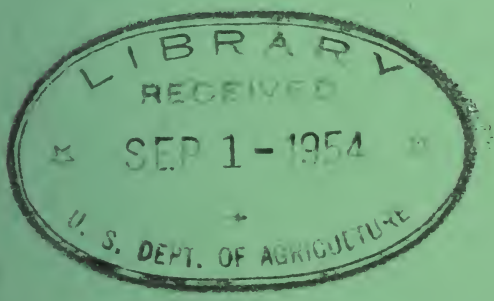


In October 1953, "Interim Log Grades for Southern Pine" was issued by the U. S. Forest Service.[1/] This grading system is based on the grade-yield return of yard lumber, which depends mainly on log diameter, and on size and number of knots. While the specifications for these grades are fairly simple, the beginner may encounter some difficulty in familiarizing himself with certain details.

Two aids are available to interpret these grades. One aid consists of the 3 tables in this booklet based on 2-, 3-, and 4-face grading. Figures by log diameters are given for knot size, sweep, and bad-knot specifications. According to the number of faces graded on the log, the grader, after determining the scaling diameter, can refer to the appropriate table to find the maximum log grade based on the K value. Inches of degrading sweep and bad-knot size for each log diameter are also shown.

The other aid gives the details of a grading stick based on 3-face grading. A full-scale replica can be obtained by request from the Southeastern Forest Experiment Station and can be cut out and fastened with rubber cement to a suitable stick. Similar log grade sticks can be made for 2- or 4-face grading, based on the tabular data given herein.

These aids are meant to be used in conjunction with the report on southern pine log grades. To be proficient at grading southern pine logs, the grader should know how to recognize types of knots and other defects in logs.

1/ Copies of this report can be obtained from the Southeastern Forest Experiment Station, Box 2570, Asheville, N. C., and the Southern Forest Experiment Station, 704 Lowich Building, New Orleans, La.

GRADING INSTRUCTIONS

1. Determine the scaling diameter of log to nearest whole inch.

2. Check appropriate table to determine limits of K for the diameter involved.

3. Examine the log, using either 2, 3, or 4 faces, and establish the log grade as determined by the K count.

4. If sweep equals or exceeds the value shown in table, mark the log down one grade.

5. Mark down one grade any log having wood-rot fruiting body or punk knot piercing the bark surface.

6. Mark down to grade #4 any grade #3 log if it is impossible to encompass all bad knots (minimum diameter of knots shown in table) within a continuous surface area no larger than 1/4 log length and no wider than 1/4 log circumference.

DEFINITIONS

1. Face - Any quarter cylindrical surface running full length of log.

2. Overgrown knot - Any invisible branch or stub buried beneath the log surface but indicated by a surface bump or disturbance of bark pattern.

3. Sound knot - Any visible branch, stub, or socket which contains neither advance decay extending to log heart nor any hole larger than 1/4 inch penetrating more than 2 inches.

4. Unsound knot - Any visible branch, stub, or socket not conforming to definition of sound knot.

5. Bad knot - Any visible knot which is so large that D is less than 6 times knot diameter, or any unsound knot.

6. Sweep - Greatest deviation of longitudinal log axis from straight line connecting centers of each end of log. It should be measured to nearest whole inch, and is analogous to the middle ordinate of an arc.

FOR 2-FACE GRADING

D.i.b. small end	Log grade No.			Degrading-	
	1	2	3	Sweep	Bad knot
Inches	Limits of K			Inches	Inches
5			0-	3	1
6			0-	3	2
7			0-	3	2
8			0-	3	2
9			0-	3	2
10		0-2	3-	4	2
11		0-2	3-	4	2
12		0-3	4-	4	3
13		0-3	4-	5	3
14		0-3	4-	5	3
15		0-3	4-	5	3
16		0-4	5-	6	3
17	0-1	2-4	5-	6	3
18	0-1	2-4	5-	6	4
19	0-1	2-4	5-	7	4
20	0-2	3-5	6-	7	4
21	0-2	3-5	6-	7	4
22	0-2	3-5	6-	8	4
23	0-2	3-5	6-	8	4
24	0-2	3-6	7-	8	5
25	0-2	3-6	7-	9	5
26	0-2	3-6	7-	9	5
27	0-2	3-6	7-	9	5
28	0-2	3-7	8-	10	5
29	0-2	3-7	8-	10	5
30	0-3	4-7	8-	10	6

FACTOR K. -- Number of overgrown knots, plus the sum of diameters of sound exposed knots, plus twice the sum of diameters of unsound knots. Diameters to nearest whole inch at point of trimming.

FOR 3-FACE GRADING

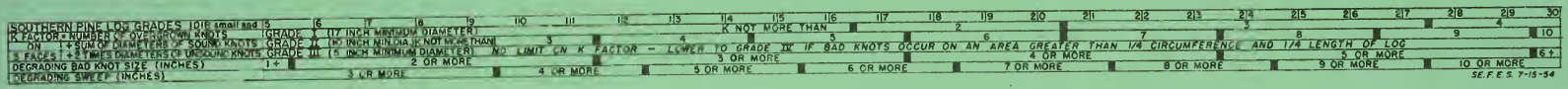
D.i.b. small end	Log grade No.			Degrading-	
	1	2	3	Sweep	Bad knot
Inches	Limits of K			Inches	Inches
5			0-	3	1
6			0-	3	2
7			0-	3	2
8			0-	3	2
9			0-	3	2
10		0-3	4-	4	2
11		0-3	4-	4	2
12		0-4	5-	4	3
13		0-4	5-	5	3
14		0-4	5-	5	3
15		0-5	6-	5	3
16		0-5	6-	6	3
17	0-2	3-5	6-	6	3
18	0-2	3-6	7-	6	4
19	0-2	3-6	7-	7	4
20	0-2	3-6	7-	7	4
21	0-3	4-7	8-	7	4
22	0-3	4-7	8-	8	4
23	0-3	4-7	8-	8	4
24	0-3	4-8	9-	8	5
25	0-3	4-8	9-	9	5
26	0-3	4-8	9-	9	5
27	0-3	4-9	10-	9	5
28	0-4	5-9	10-	10	5
29	0-4	5-9	10-	10	5
30	0-4	5-10	11-	10	6

FACTOR K. -- Number of overgrown knots, plus the sum of diameters of sound exposed knots, plus twice the sum of diameters of unsound knots. Diameters to nearest whole inch at point of trimming.

FOR 4-FACE GRADING

D.i.b. small end	Log grade No.			Degrading-	
	1	2	3	Sweep	Bad knot
Inches	Limits of K			Inches	Inches
5			0-	3	1
6			0-	3	2
7			0-	3	2
8			0-	3	2
9			0-	3	2
10		0-5	6-	4	2
11		0-5	6-	4	2
12		0-6	7-	4	3
13		0-6	7-	5	3
14		0-7	8-	5	3
15		0-7	8-	5	3
16		0-8	9-	6	3
17	0-3	4-8	9-	6	3
18	0-3	4-9	10-	6	4
19	0-3	4-9	10-	7	4
20	0-4	5-10	11-	7	4
21	0-4	5-10	11-	7	4
22	0-4	5-11	12-	8	4
23	0-4	5-11	12-	8	4
24	0-4	5-12	13-	8	5
25	0-5	6-12	13-	9	5
26	0-5	6-13	14-	9	5
27	0-5	6-13	14-	9	5
28	0-5	6-14	15-	10	5
29	0-5	6-14	15-	10	5
30	0-6	7-15	16-	10	6

FACTOR K. -- Number of overgrown knots, plus the sum of diameters of sound exposed knots, plus twice the sum of diameters of unsound knots. Diameters to nearest whole inch at point of trimming.



A full-scale copy of this grading stick can be obtained from the Southeastern Forest Experiment Station, Box 2570, Asheville, N. C. Fasten it to a piece of plywood with rubber cement and then apply a clear, protective coating.

SOUTHERN PINE LOG GRADES	DIB small end	5	6	7	8	9	10
K FACTOR = NUMBER OF OVERGROWN KNOTS		GRADE I (17 INCH MINIMUM DIAMETER)					
ON	+ SUM OF DIAMETERS OF SOUND KNOTS	GRADE II (10 INCH MIN. DIA.) K NOT MORE THAN					
3 FACES	+2 TIMES DIAMETERS OF UNSOUND KNOTS	GRADE III (5 INCH MINIMUM DIAMETER)					NO LIMI
DEGRADING BAD KNOT SIZE (INCHES)		1 +	2 OR MORE				
DEGRADING SWEEP (INCHES)		3 OR MORE					

10	11	12	13	14	15	16	17	18	19	20
K NOT MORE THAN						2				
3		4		5		6				
LIMIT ON K FACTOR – LOWER TO GRADE IV IF BAD KNOTS OCCUR ON AN AREA GREA										
	3 OR MORE					4 OR				
4 OR MORE		5 OR MORE		6 OR MORE		7 OR MOR				

20	21	22	23	24	25	26	27	28	29	30
3								4		
7		8		9				10		
GREATER THAN 1/4 CIRCUMFERENCE AND 1/4 LENGTH OF LOG										
4 OR MORE		5 OR MORE						6+		
R MORE	8 OR MORE		9 OR MORE				10 OR MORE			

SE. F. E. S. 7-15-54